The Theory of Infinite Knowledge and Supreme Entities

V2

Abstract

This framework examines possible couplings among intelligence (IQ), energy mastery, computational capacity, governance and cooperative strategies over multi-millennial timescales. The ten core relations are phenomenological analogues of established functional forms (learning curves, logistic growth, continuous hazard rates, statistical error reduction). A required sequential order is emphasised: civilisational unification is a prerequisite; only within a sufficiently unified system can rare high-IQ individuals drive major breakthroughs; the moral orientation of the resulting trajectory then determines whether energy and knowledge scales expand constructively or destructively. Universal or multiversal extensions remain contingent on the eventual validation of frameworks such as string/M-theory and on survival through intermediate filters. The work is an exploratory map, not a predictive theory.

Keywords: intelligence, Kardashev scale, civilisational unification, learning curves, sequential order, string landscape, exploratory framework

1. IQ and the Perception of Reality

Concept: General intelligence supports the construction of more accurate formal models of reality.

Psychometric evidence links *g* to abstract reasoning and the speed of acquiring complex skills. Historical reorganisations of knowledge required both new data and the capacity to restructure conceptual systems. The saturating form below is the direct analogue of exponential learning curves; it keeps P strictly inside (0,1):

$$\mathbf{P(r) = 1 - \exp(-k \cdot IQ^{n} / r)} \quad (1)$$

k ≈ 0.0008, n ≈ 1.4. Higher domain complexity r lowers attainable accuracy for any fixed IQ.

IQ	P(r=25)	P(r=50)	P(r=90)	P(r=150)
80	0.015	0.007	0.004	0.002
100	0.020	0.010	0.006	0.003
120	0.026	0.013	0.007	0.004
140	0.032	0.016	0.009	0.005
160	0.038	0.019	0.011	0.006
180	0.045	0.023	0.013	0.008
200	0.052	0.026	0.015	0.009

Observation: Accuracy rises with IQ and falls with complexity, remaining bounded. The form inherits the well-tested shape of classic learning curves.

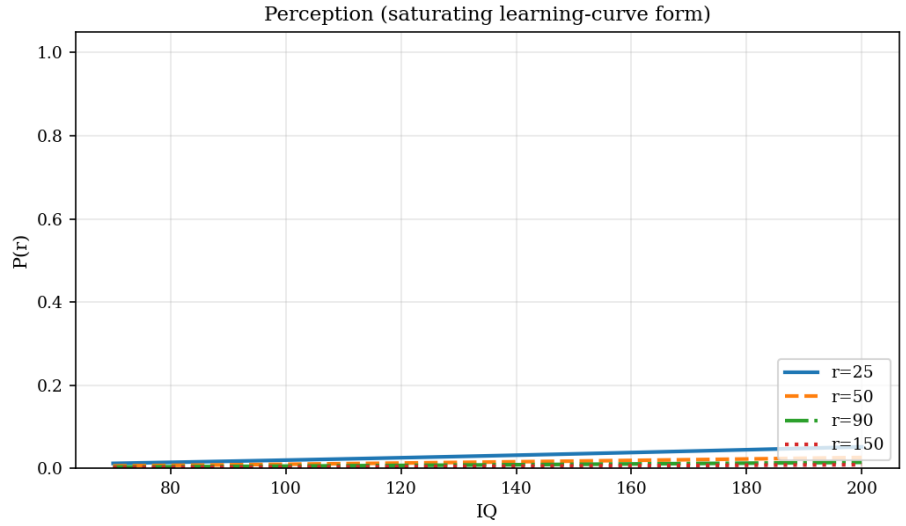

Figure 1. Perception accuracy versus IQ for four complexity levels.

2. Evolution of Civilizations and the Kardashev Scale

Concept: Energy control provides a coarse ordering of technological reach. Present human primary power ≈ 1.9×10^{13} W.

The model combines logistic growth of an effective Type parameter with a capacity ceiling. Real trajectories face thermodynamic, material and political constraints that the smooth T(t) does not capture; the curves illustrate upper-bound possibility on multi-millennial timescales, not expected history on century scales.

$$\mathbf{T(t) = T_{max}/(1+e^{-\alpha(t-t_0)}),\ E_c(t) = E_0 \cdot 10^{T(t)} \cdot (1-e^{-t/\tau})} \quad (2)$$

t	T fast	E_c fast	T med	E_c med
50	0.02	3.58e+15	0.06	2.63e+15
100	0.15	7.98e+15	0.19	6.30e+15
150	0.72	3.76e+16	0.51	1.77e+16

t	T fast	E_c fast	T med	E_c med
200	1.50	2.55e+17	1.00	6.41e+16
250	1.75	4.95e+17	1.36	1.68e+17
300	1.79	5.70e+17	1.52	2.64e+17
400	1.80	6.08e+17	1.59	3.43e+17

Observation: S-shaped energy growth appears under logistic Type advance. All illustrated paths remain far above current consumption; real bottlenecks are expected to flatten curves earlier.

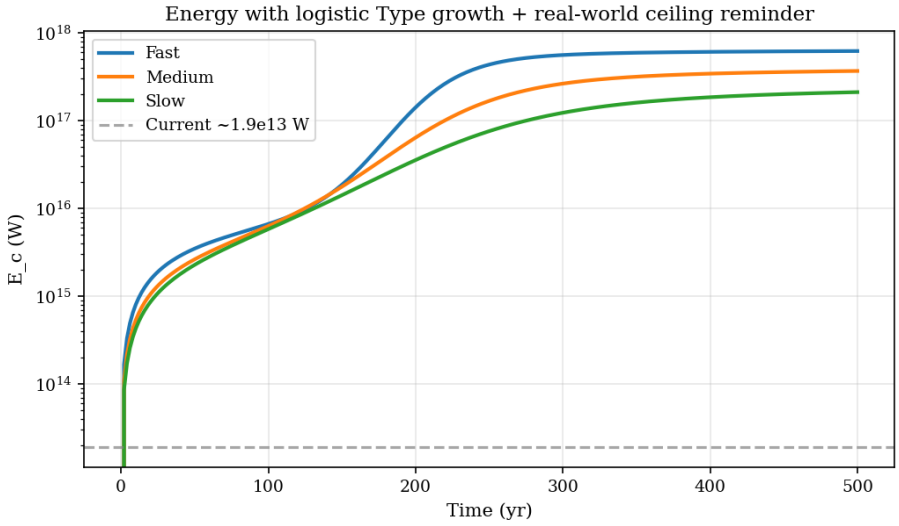

Figure 2. Energy capacity under logistic Type growth (three rates).

3. The Multiverse and Patterns of Knowledge

Concept: In a landscape of possible vacua (string/M-theory), knowledge of physical patterns can be refined by observation and simulation, subject to severe computational and causal limits.

The string landscape and M-theory suggest an enormous discrete set of possible low-energy laws. Mapping even a tiny fraction is limited by computational complexity and by cosmological horizons. The elementary learning curve

$$\mathbf{K_p(N) = 1 - \exp(-a\,N)} \quad (3)$$

describes only the idealised approach to precision inside the accessible domain. Universal or multiversal cartography remains contingent on the eventual empirical status of these frameworks and on survival through intermediate stages.

N	a=3e-4	a=8e-5	a=2e-5	a=5e-6
10^3	0.2592	0.0769	0.0198	0.0050
10^4	0.9502	0.5507	0.1813	0.0488
10^5	≈1	0.9997	0.8647	0.3935
10^6	≈1	≈1	≈1	0.9933
10^7	≈1	≈1	≈1	≈1
10^8	≈1	≈1	≈1	≈1

Observation: Precision saturates at a rate set by a. Residual floors from quantum noise and causal disconnection remain.

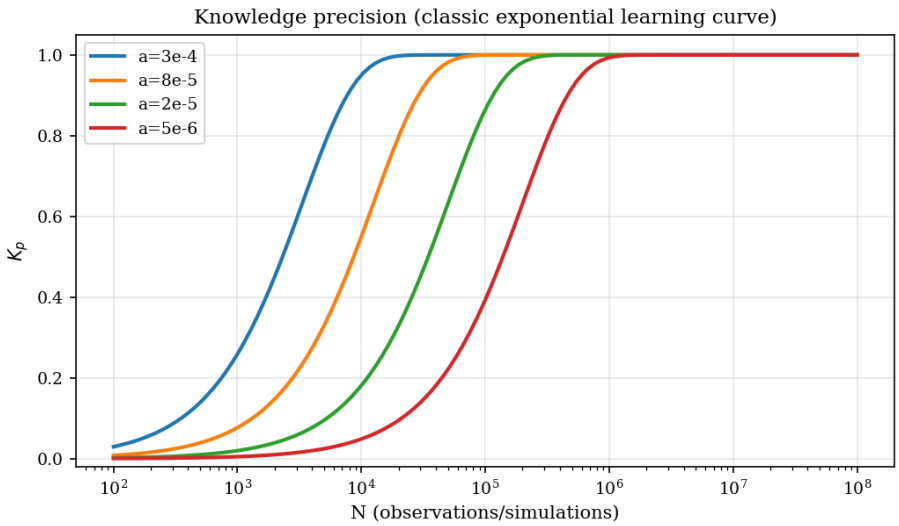

Figure 3. Knowledge precision (standard learning curve).

4. Risks: Errors, Accidents, Collapse

Concept: Complex systems accumulate risk that continuous correction can offset.

$$R_t = R_0 \cdot \exp((b - c)\, t) \quad (4)$$

Risk declines only when the effective correction rate c exceeds the intrinsic growth rate b. Civilisational self-destruction (a possible Great Filter) corresponds to trajectories in which c remains permanently below b.

t	Strong	Balanced	Weak	Very strong
0	0.180	0.180	0.180	0.220
50	0.140	0.180	0.231	0.140
100	0.109	0.180	0.297	0.089
150	0.085	0.180	0.381	0.057
200	0.066	0.180	0.489	0.036
250	0.052	0.180	0.628	0.023
300	0.040	0.180	0.807	0.015

Observation: Only sustained correction stronger than intrinsic growth drives risk downward. The live possibility of filter-type failure is retained.

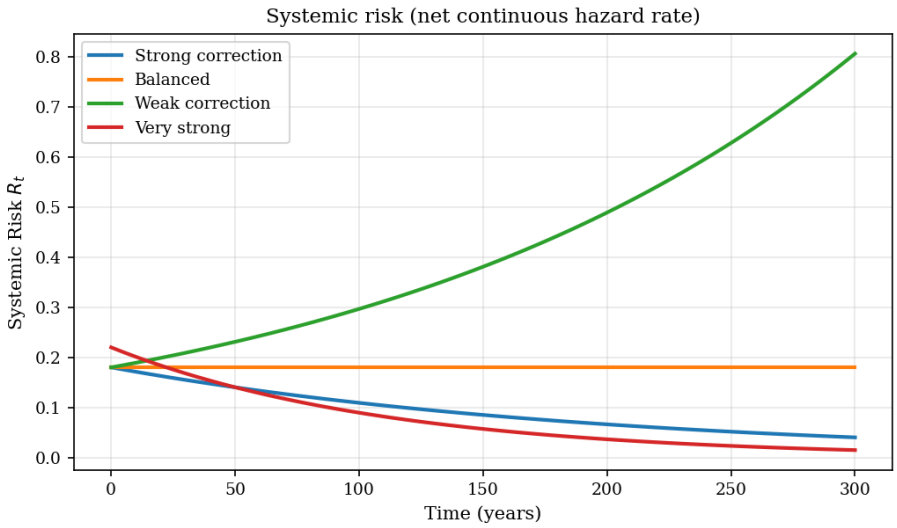

Figure 4. Systemic risk under four net-hazard regimes.

5. Supreme Entities and Immutable Laws

Concept: Physical constants appear stable. Accumulated observation reduces residual uncertainty about their values.

The statistical form below encodes the ordinary $1/\sqrt{t}$ reduction of uncertainty. The further conjecture that advanced entities actively "maintain" the constants is left as pure, currently unfalsifiable speculation; it is not required by the mathematics and is not endorsed as a physical claim.

$$L_s = 1 - (1 - L_0) \cdot \exp(-\mu \sqrt{t}) \quad (5)$$

t	μ=0.035	μ=0.05	μ=0.07
0	0.450	0.300	0.200
200	0.665	0.655	0.703
500	0.749	0.771	0.833
1000	0.818	0.856	0.913
2000	0.885	0.925	0.965
4000	0.940	0.970	0.990
6000	0.963	0.985	0.996

Observation: Stability rises toward an asymptote with square-root time dependence. The equation describes observational uncertainty, not ontological maintenance of the laws.

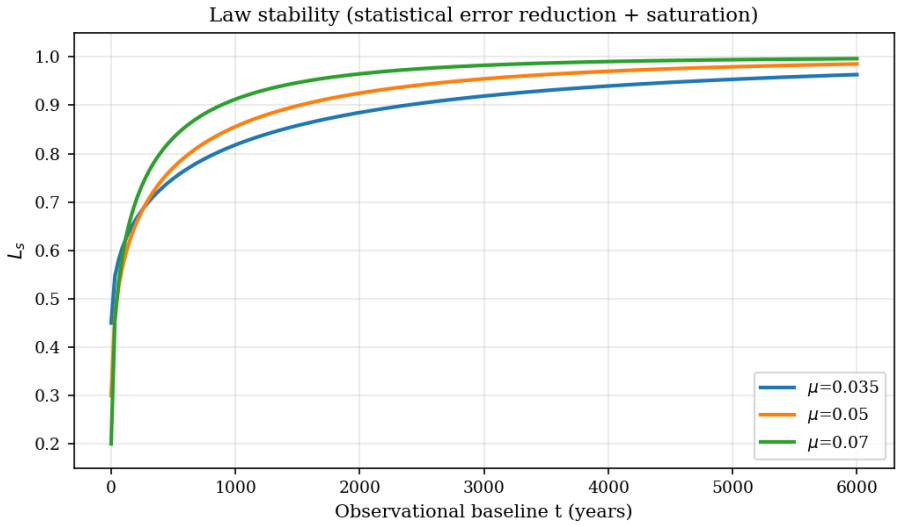

Figure 5. Law-stability trajectories.

6. Quantum Computing and Processors

Concept: Quantum processors can accelerate exploration of large configuration spaces, subject to error-correction overhead.

$$\mathbf{Q_c = Q_m \cdot (1 - e^{-q\,t}) \cdot N_q} \quad (6)$$

The saturating exponential is the standard bounded-growth solution in time t. Present devices remain deep in the noisy intermediate-scale regime; the asymptotic values shown are optimistic upper sketches on long timescales.

t	Conservative	Moderate	Optimistic
5	1.77e+10	5.08e+10	1.38e+11
10	3.02e+10	8.01e+10	2.00e+11
15	3.90e+10	9.70e+10	2.27e+11
20	4.52e+10	1.07e+11	2.40e+11
30	5.27e+10	1.16e+11	2.48e+11
40	5.64e+10	1.19e+11	2.50e+11
50	5.82e+10	1.20e+11	2.50e+11

Observation: Capacity approaches a ceiling set by N_q. Error-correction overhead remains a major practical barrier not captured by the simple form.

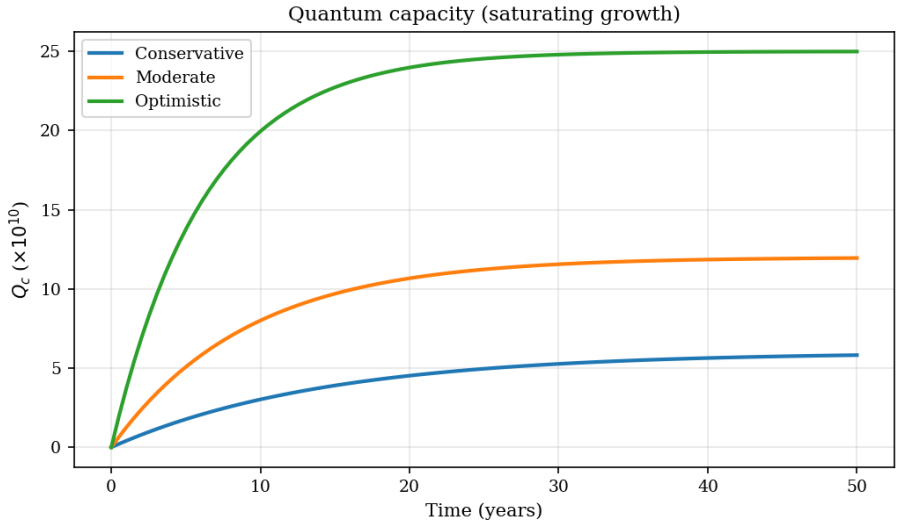

Figure 6. Quantum capacity under three assumptions.

7. Morality, Governance, and Species Role

Concept: Collective problem-solving capacity declines with division and rises with inclusive, low-friction institutions.

$$\mathbf{G_e = [C_i / (D + 1)] \cdot (1 - F)} \quad (7)$$

The inverse dependence on division formalises coordination-cost arguments. The factor (1–F) reduces efficiency when friction rises. Laboratory evidence on reciprocity further supports the value of low-friction cooperation.

D	Ci=90	Ci=120	Ci=160
0	82.8	105.6	131.2
1	41.4	52.8	65.6
2	27.6	35.2	43.7
3	20.7	26.4	32.8
5	13.8	17.6	21.9
7	10.3	13.2	16.4
10	7.5	9.6	11.9

Observation: Efficiency is highly sensitive to division. Higher collective intelligence only partially offsets fragmentation costs. Rising friction F lowers G_e.

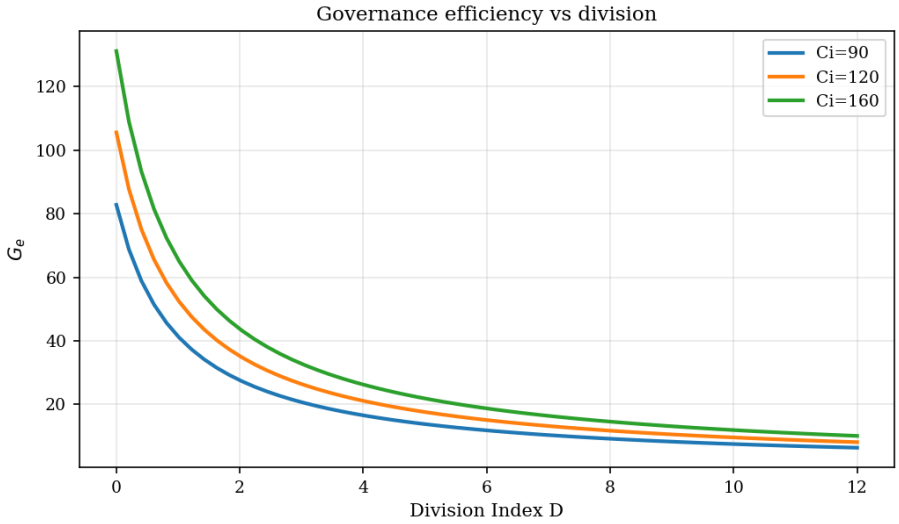

Figure 7. Governance efficiency versus division.

8. Testing, Restarting, and Infinite Cycles

Concept: Iterative testing and corrective resets improve long-term robustness.

$$\mathbf{R_c = S(1-e^{-r\,t})/r} \quad (8)$$

Integrated exponential kernel — the same structure used in discounted cumulative performance measures.

t	S=0.65	S=0.85	S=0.95
30	15.1	21.7	25.7
60	23.8	37.3	46.5
100	30.1	51.6	68.3
150	33.7	62.4	88.2
200	35.1	68.7	102.2
250	35.7	72.3	112.1
300	35.9	74.4	119.1

Observation: Longer stable baselines raise the efficacy of later corrective cycles, approaching S/r.

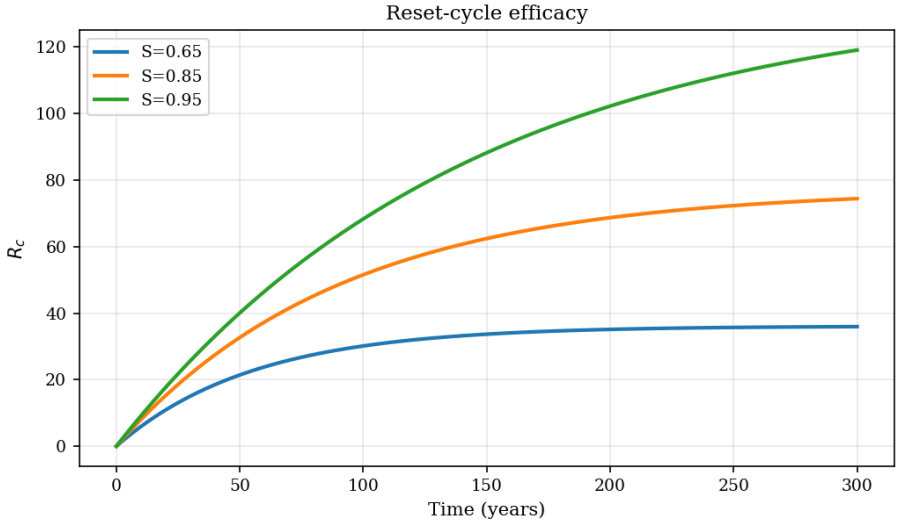

Figure 8. Reset-cycle efficacy.

9. The “Race” Toward Supremacy and Collective Balance

Concept: Competition can accelerate innovation while conflict erodes collective capacity.

$$B_c = \Sigma\, w_i\, G_i\, (1 - C_i) \quad (9)$$

Minimal linear trade-off between growth incentives and conflict costs.

C	Low G	Med G	High G
0.0	0.060	0.100	0.150
0.2	0.048	0.080	0.120
0.4	0.036	0.060	0.090
0.6	0.024	0.040	0.060
0.8	0.012	0.020	0.030

Observation: Balance falls linearly with conflict. Higher growth raises the intercept but does not change the slope against conflict.

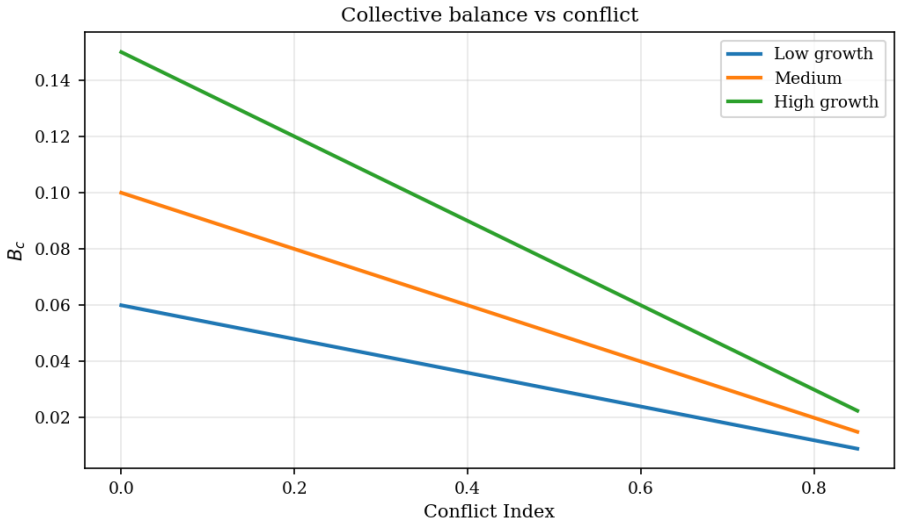

Figure 9. Collective balance versus conflict.

10. Cooperative Survival — A Statistical Sketch

Concept: Cooperative strategies can enjoy statistical advantages, yet pure numerical majority is insufficient for indefinite persistence.

$$P_s = B \cdot \exp(-c\, t) \quad (10)$$

Evolutionary game theory shows that reciprocity, reputation and institutional enforcement can stabilise cooperation. The pure exponential decay demonstrates that, without such mechanisms, even a large cooperative majority erodes.

t	Strong B=0.85	Baseline B=0.70	Weak B=0.55
0	0.850	0.700	0.550
50	0.630	0.425	0.247
100	0.466	0.258	0.111
150	0.346	0.156	0.050
200	0.256	0.095	0.022
250	0.190	0.057	0.010

Observation: Survival declines under pure exponential decay. Additional stabilisers are required for long-term cooperative persistence.

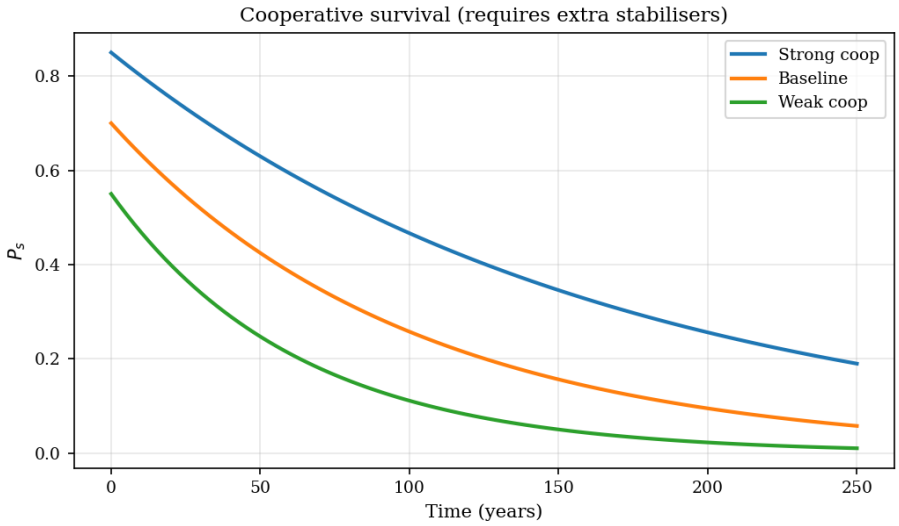

Figure 10. Cooperative survival under three initial proportions.

11. Required Sequential Order and Intermediate Mechanisms

Large-scale trajectories cannot begin from a fragmented state on century timescales. A necessary order of stages is required, operating over centuries to millennia if survival permits:

Stage 1 – Civilisational unification. Without a sufficient degree of political, institutional and informational integration, collective energy mastery and coordinated knowledge projects remain severely constrained. Fragmentation raises the division index D and the conflict index C, collapsing governance efficiency and balance capacity. Unification is therefore a prerequisite, not an optional later refinement.

Stage 2 – Rare high-IQ individuals inside a unified system. Once a sufficiently coherent civilisation exists, individuals whose cognitive capacity lies far above the mean can catalyse discontinuous advances (historical analogues include the role of figures such as Einstein within already-functioning scientific institutions). The perception function (1) and the knowledge-precision function (3) become effective multipliers only when the surrounding institutional substrate can absorb and scale their insights.

Stage 3 – Moral / strategic orientation. The same cognitive and energetic capacities can be directed toward cooperative stabilisation or toward exploitative or self-destructive ends. The risk equation (4) and the cooperative-survival sketch (10) formalise this bifurcation: sustained correction and low residual conflict favour expansion; persistent high conflict or weak correction favour filter-type collapse.

Stage 4 – Energy and knowledge scale. Only after the preceding stages can Kardashev-type energy growth and large-scale knowledge accumulation become plausible. Even then, thermodynamic, material and political constraints remain binding.

Stage 5 – Universal / multiversal extension (contingent). Any further extension toward mapping regions of a string/M-theory landscape remains speculative and is conditional on (i) the empirical validation of those frameworks and (ii) successful passage through all prior filters.

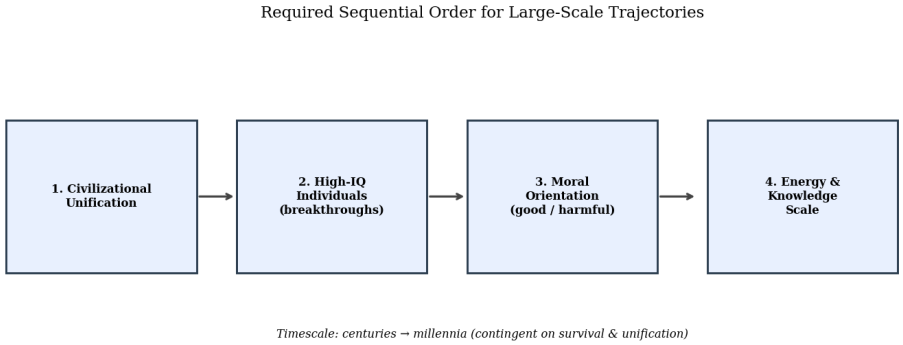

Figure 11. Required sequential order for large-scale trajectories (multi-millennial timescale).

Intermediate mechanisms that would turn these stages into demonstrated pathways are still largely missing. Possible conceptual scaffolds include progressive institutional architectures that amplify individual cognitive gains, hierarchical computational systems capable of exploring larger regions of a discrete landscape of laws, and selection pressures that favour long-term cooperative stability. None of these scaffolds is presently demonstrated; they are noted only as directions in which the scale jumps might eventually be bridged.

12. Interconnections and Illustrative Joint Dynamics

The ten quantities remain conceptually coupled. Higher perception accuracy improves energy-system design and risk models. Greater energy capacity expands feasible computation and observation. Better knowledge and computation improve governance and risk detection. Lower residual risk and higher governance efficiency protect further accumulation. Cooperative balance modulates the rate at which these loops operate. The quantitative links used in the joint illustration below are chosen for visual clarity and are not calibrated to data; the figure is explicitly non-predictive.

Figure 12. Conceptual coupling among the ten quantities.

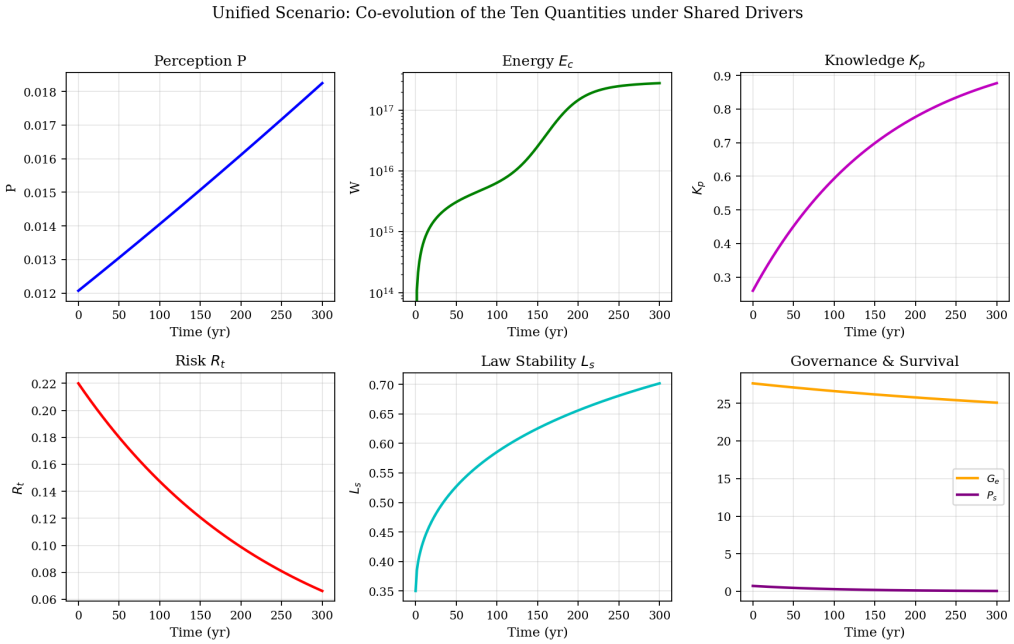

Figure 13. Illustrative unified scenario under shared drivers (not a forecast).

Discussion: Scope, Sequence and Remaining Speculation

The functional forms are analogues of established mathematical objects. The required sequential order — unification before high-IQ leverage, orientation before scalable energy/knowledge growth, and only then any possible multiversal extension — places the framework on multi-millennial rather than century timescales and makes the dependence on survival explicit.

The durable core remains: the psychometric link between general intelligence and abstract model-building; the utility of energy scale as a coarse metric tempered by real constraints; saturating learning curves; the sensitivity of collective performance to division; the necessity of continuous risk correction; and the live possibility of filter-type failure. Intermediate mechanisms that would convert the large scale jumps into demonstrated pathways are still absent; string/M-theory landscape ideas supply a possible discrete arena but do not yet supply the bridges.

The theory is therefore an exploratory map of a possible long-term order and of the points at which that order can fail. It does not claim predictive power for the next fifty or one hundred years, nor does it assert that the multiversal stage will ever be reached.

Conclusion

Intelligence, energy, computation, governance and cooperation can be linked through phenomenological relations grounded in established functional forms. A necessary sequential order begins with civilisational unification, proceeds through the catalytic role of rare high-IQ individuals, is shaped by moral and strategic orientation, and only then opens the possibility of large energy and knowledge scales. Universal or multiversal extensions remain contingent on the validation of frameworks such as string/M-theory and on survival through all prior stages. The framework maps these possibilities and their failure modes; it does not forecast their realisation.

References

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Standard literature on learning curves, hazard rates, logistic growth and statistical error reduction.
Discussions of the string/M-theory landscape, the Great Filter, Fermi paradox and existential risk.
Gödel incompleteness; computational complexity; cosmological horizon arguments.

Models are phenomenological analogues of established functional forms. The framework is exploratory.